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Image watermarking for tamper detection

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Abstract

We propose an oblivious watermarking technique for tamper detection in digital images. By comparing correlation values from different portions of the image, the technique enables us to distinguish malicious changes, such as replacing/adding features from nonmalicious changes resulting from common image processing operations. The technique can be implemented with small memory and computational requirements, which makes it potentially useful for hardware implementation in digital cameras. The technique works by dividing an image into blocks and watermarking each block with a transparent, robust watermark that sensitively depends on a secret key (camera's ID) and continuously on the image. The watermarking method is a frequency based spread spectrum technique. To achieve a continuous dependency on the image, we propose a special bit extraction procedure that extracts bits from each block by thresholding projection onto key-dependent random smooth patterns. Those bits are then used for initializing a PRNG and synthesizing the spread spectrum signal

Index Terms

Inspec

Controlled Indexing

cryptography image coding image recognition

Non-controlled Indexing

PRNG adding features bit extraction procedure computational requirements continuous dependency correlation values digital cameras digital images frequency based spread spectrum technique image processing operations image watermarking key-dependent random smooth patterns malicious changes nonmalicious changes oblivious watermarking technique projections replacing features secret key spread spectrum signal tamper detection thresholding

Author Keywords

Not Available

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No references available on IEEE Xplore.

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